

Appendix
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Appendix 1

Design Features for Action Alternatives and Monitoring

Appendix 1

Design Features for Action Alternatives

The objective of these design features is to ensure that the treatments protect and enhance conditions of late-successional forests ecosystems, which serve as habitat for late-successional and old-growth forest related species. Late-Successional Reserves (LSRs) are designed to maintain a functional, interacting late-successional ecosystem.

- ! Require one-end suspension in all skyline units and areas yarded with ground-based equipment.
- ! In units (or portions) requiring ground-based equipment, falling and yarding will be limited to June 1st through October 15th, depending on seasonal rainfall when the following are met: 1) when the soil moisture can reasonably be expected to be at or below 25% of field capacity, and 2) when road conditions are dry for hauling. Falling and yarding equipment would be done with rubber tired or tracked vehicles.
- ! Ground-based equipment will consist of a feller/buncher and forwarder. The falling and yarding will be done with cut-to-length harvest system cable of directionally felling trees, cutting trees to length, completely limbing the trees, and depositing the slash in windrows between reserved trees. The yarding vehicle would forward the logs completely free and clear of the ground while traveling along the windrow of limbs and/or logging slash created by the harvesting process.
- ! Designated travel trails in the ground-based units will utilize existing skid roads to the extent possible.
- ! All trees designated for removal will be cut into lengths prior to yarding, so as not to damage the residual stand.
- ! To minimize damage to residual trees, do not allow falling or yarding between March 1 and June 30 on skyline and helicopter yarded units.
- ! All trees designated for removal will be limbed and topped within the units prior to yarding.
- ! Directionally fall trees away from all unit boundaries. Where density management thinning occurs within Riparian Reserves, directionally fall trees away from all stream channels. Maintain full suspension above stream channels and banks during yarding.
- ! No-treatment buffers would be applied to streams within or adjacent to thinning units as needed to maintain bank/slope stability and shade. The widths of the no-treatment buffers are identified in Section H of the Analysis File.

- ! Tree marking guidelines are outlined in Section G of the Analysis File.
- ! Leave all existing snags except where doing so would create a safety hazard.
- ! Leave one down trees per acre in all units and create one snags per acre in the north facing units. This would be accomplished after completion of harvest activities.
- ! In EA Unit 5, cut and remove all trees within a 25 to 40' radius around selected dominant trees to promote growth to the dominant trees (1 tree per 2 acres).
- ! Density management thinnings will be implemented via an economical commercial operation. Any surplus trees to habitat needs will be removed.
- ! All or portions of EA Units 14, 15, 16, 26, 27, 28, and 29 are within 0.25 miles of known marbled murrelet occupied sites: therefore, harvest activities such as felling, cable yarding, etc would not occur between April 1 and August 5 in those portions. From August 6 through September 15, there would be daily timing restrictions confining activities between two hours after sunrise and two hours before sunset.
- ! All or portions of EA Units 14, 15, 16, 26, 27, 28, and 29 are within 0.5 miles of known marbled murrelet occupied sites: therefore, helicopter yarding would not occur between April 1 and September 15 in those portions.
- ! EA Unit 30 is within 0.25 miles of a known Northern Spotted Owl (NSO) site: therefore, harvest activities such as yarding, felling, etc would not occur between March 1 and June 30 in those portions.
- ! Road activities (landing construction, renovation, improvement, and decommissioning) will not occur 1 March - 30 June within 1/4 mile of known NSO sites (EA Unit 30), except for those associated with the mainline haul route maintenance.
- ! Road activities (landing construction, renovation, improvement, and decommissioning) will not occur 1 April - 5 August within 1/4 mile of marbled murrelet occupied sites (EA Units 14, 15, 16, 26, 27, 28, and 29), except for those associated with the mainline haul route maintenance. From August 6 through September 15, there would be daily timing restrictions confining activities between two hours after sunrise and two hours before sunset.
- ! At least 10% of the stands will be left untreated.
- ! To lower the risk of blowdown in stands after treatment, portions of EA Units 6, 13, 14, 15, 16, and 29 will incorporate the following: 1) Untreated leave areas or, 2) increased leave trees per acre or, 3) favor selecting Douglas-fir verses hemlock for leave.
- ! Specific treatments for road closures are identified in Appendix 4.
- ! When replacing stream-crossing culverts on perennial streams, provide physically unobstructed passage for aquatic-dependent species.

- ! Accomplish stream-crossing culvert replacements during the instream operating period (July 01 - September 15). Accomplish culvert replacements on intermittent streams after cessation of flow or treat as if perennial. When replacing stream-crossing culverts on perennial streams, divert streamflow around work area, contain sediment (using straw bales and/or filter fabric), and [as needed] pump turbid water from excavation site onto vegetated terrace or hillslope as directed by contract administrator.
- ! All roads designated for winter use must be surfaced with an approved lift of rock. Renovation/maintenance and landing construction activities would occur during summer or fall (prior to winter storm activity). Roads would be closed according to the Transportation Management Objectives (TMO) plan. Roads designated for summer use only would be mulched, grass seeded (in accordance with District Native Plant Restoration Policy), water barred (where appropriate) and blocked prior to winter storm activity. Prior to first rains after completion of timber sale activity, roads designated to be decommissioned would be blocked, have stream crossing culverts removed, and have waterbars or dips installed as needed to restore pre-road hydrologic function.
- ! If winter haul on gravel roads is planned, then the following additional Best Management Practices should be implemented to prevent sediment delivery at or near stream crossings along the haul route. The sediment prevention measures must be in place, before winter haul begins. They include:

Apply an additional lift of rock to the area of road that can influence the stream if rill erosion is evident in the road tread near live stream crossings.

Contain any offsite movement of sediment from the road or ditchflow near streams with silt fence or sediment entrapping blankets. Such control measures must allow for the free passage of water without detention or plugging. These control structures and applications should receive frequent maintenance, and may be removed at the completion of haul.

If the ground is already saturated from winter rains and more than 2 inches of precipitation is predicted in the project area over the next 24 hours, then winter haul should be suspended. Operations may resume after the 24 hour suspension, except when another storm (exceeding 2 inches) is forecasted. Currently, precipitation predictions are based on the Quantitative Precipitation Forecast (QPF) maps from **The HydroMeteorological Prediction Center** internet site: <http://www.hpc.ncep.noaa.gov/html/fcst2.html>. A similar predictive model internet site may be used if this site should be unavailable in the future.

- ! Where density management occurs within Riparian Reserves, POC would be thinned to at least a 50' spacing around individual trees/groups to reduce spread of *Phytophthora lateralis* (PL).
- ! In density management thinning units, POC leave trees or groups should be spaced at least 50 feet apart.

- ! The basic strategy for POC management in the Camas Creek Analysis Area is: 1) to manage Low Risk Sites for the long term POC population viability, 2) to limit the spread of PL within the High Risk Sites; and 3) to prevent disease movement into areas with Low Risk. Design features and mitigation consist of active treatments employed on the High Risk Sites (ie. roads and streams) and passive management of Low Risk Sites across the landscape. The treatments for the High Risk Sites include:

- 1) Wash all road construction and logging equipment prior to move in.
- 2) Require rocking of roads prior to fall rains.
- 3) Restrict timber haul to the dry season for following EA Units: 4, 10, 27, & 28.
- 4) In ground-based yarding areas, the yarding equipment must be able to forward the logs completely free and clear of the ground and will travel along the windrows of limbs and/or logging slash created by the harvesting process. Avoid use of equipment in PL infection sites.
- 5) Cut unmerchantable POC and Pacific yew 25 feet uphill and 30 feet downhill from edge of running surface on all haul roads on BLM-managed lands prior to timber haul (this includes all harvest landings).
- 6) All merchantable POC 25' uphill and 50' downhill from running surface on all haul roads within Riparian Reserves, or stands greater than 80 years of age, or trees greater than 20" in DBH will be cut or girdled and left in place.
- 7) All merchantable POC 25' uphill and 50' downhill from running surface on all haul roads outside of Riparian Reserves, or stands less than 80 years of age, or trees less than 20" in DBH will be cut and removed.

- ! Best Management Practices (BMP's) would be followed for all actions as listed in Section H pages 69 - 74, Volume 2, Coos Bay District Final Proposed Resource Management Plan, 1994.

Monitoring

Monitoring guidelines are established in the 1995 FRMP/ROD, pp. L-3, L-4, L8, & L9, and the 1994 Standards and Guidelines, pp. E-1 to E-10.

Monitor the effectiveness of roadside sanitation of POC and Pacific Yew, road closures, and equipment washing in limiting the spread of PL into Low Risk areas.

The Low Risk Areas will be surveyed by use of aerial photos or infrared imagery to detect potential spread of PL from High Risk Areas along roads sanitized and harvest units. This survey would be conducted approximately 5 years from now, when imagery becomes available.

A spot sample of the roadsides will be done on the ground where previous infection centers were mapped and areas of green POC were cut. This should occur 3 years and 6 years after completion of the timber sale contract. This will be done to see if PL has spread into Low Risk areas outside of the sanitized roadside area.

All roads closed as a result of the action alternatives would be monitored to determine whether design features were implemented, and were effective one year after implementation.

Ground-based System Monitoring

A systematic evaluation of the areas yarded with ground-based equipment within a year after completion of harvest activities. The evaluation will determine the extent of the trail network within the unit, the amount of old trails used in proportion to new trails created, and effectiveness of limiting equipment to soil moisture content.

Appendix 2

Density Management Thinning Unit Details

Camas Analysis Area LSR EA Alternative II - Proposed Action

EA Unit No.	Photo # (97)	Legal	Treated Acres	Treatment	Stand Exam Birthdate*	Harvest System	Comments
1	29-43-36	28-9-23	27	DM-LSR	1963	Skyline	
2	29-43-36	28-9-23	58	DM-LSR	1962	Skyline	
4	29-43-35	28-9-23	33	DM-LSR	1961	Skyline	
	29-43-35	28-9-23	50	DM-LSR	1961	Ground-based	
5	25-44-37	28-9-25	61	DM-LSR	1961	Ground-based	
6	25-44-37	28-9-25	18	DM-LSR	1963	Skyline	Portion in NSO circle
	25-44-37	28-9-25	52	DM-LSR	1963	Ground-based	Portion in NSO circle
10	20-41-174	28-9-21	8	DM-LSR	1961**	Ground-based	Portion in NSO circle
13	20-42-55	28-9-27	23	DM-LSR	1963	Skyline	
14	20-42-55	28-9-27	16	DM-LSR	1963	Helicopter	
15	20-42-55	28-9-27	11	DM-LSR	1964	Skyline	
	20-42-55	28-9-27	27	DM-LSR	1964	Helicopter	
16	20-42-55	28-9-27	20	DM-LSR	1961	Skyline	
	20-42-55	28-9-27	23	DM-LSR	1961	Helicopter	
18	21-40-36	28-9-29	22	DM-LSR	1955	Helicopter	Deleted area north of unit due to NSO concerns.
19	21-40-36	28-9-29	50	DM-LSR	1961	Helicopter	Portion in NSO circle
20	20-41-172	28-9-33	56	DM-LSR	1959	Skyline	
	20-41-172	28-9-33	23	DM-LSR	1959	Helicopter	
21	20-41-172	28-9-33	25	DM-LSR	1959	Helicopter	
22	20-41-171	28-9-33	51	DM-LSR	1961	Helicopter	
23	20-41-171	28-9-33	40	DM-LSR	PL 1968	Skyline	
	20-41-171	28-9-33	18	DM-LSR	PL 1968	Helicopter	
25	21-40-33	29-9-5	18	DM-LSR	1965	Skyline	
26	21-39-126	28-9-31	9	DM-LSR	PL 1965**	Skyline	
27	21-39-126	28-9-31	7	DM-LSR	1966	Ground-based	
28	21-39-126	28-9-31	9	DM-LSR	1966	Ground-based	
29	21-39-126	28-9-31	13	DM-LSR	1961	Skyline	
30	21-39-126	28-9-21	16	DM-LSR	1961**	Skyline	In NSO circle
			784				

6,8,8,6,7,9,9,7,8,37

* All stands are D2-= in FOI.

** Birthdate from FOI.

All stands have been previously pre-commercially thinned.

Camas Analysis Area LSR EA
Alternative III - Alternative Action

EA Unit No.	Photo # (97)	Legal	Treated Acres	Treatment	Stand Exam Birthdate*	Harvest System	Comments
1	29-43-36	28-9-23	18	DM-LSR	1963	Skyline	
2	29-43-36	28-9-23	29	DM-LSR	1962	Skyline	
4	29-43-35	28-9-23	18	DM-LSR	1961	Skyline	
	29-43-35	28-9-23	41	DM-LSR	1961	Ground-based	
5	25-44-37	28-9-25	30	DM-LSR	1961	Ground-based	
6	25-44-37	28-9-25	49	DM-LSR	1963	Ground-based	Portion in NSO circle
10	20-41-174	28-9-21	6	DM-LSR	1961**	Ground-based	Portion in NSO circle
13	20-42-55	28-9-27	16	DM-LSR	1963	Skyline	
14	20-42-55	28-9-27	8	DM-LSR	1963	Helicopter	
15	20-42-55	28-9-27	8	DM-LSR	1964	Skyline	
	20-42-55	28-9-27	26	DM-LSR	1964	Helicopter	
16	20-42-55	28-9-27	14	DM-LSR	1961	Skyline	
	20-42-55	28-9-27	14	DM-LSR	1961	Helicopter	
18	21-40-36	28-9-29	9	DM-LSR	1955	Helicopter	Deleted area north of unit due to NSO concerns.
19	21-40-36	28-9-29	34	DM-LSR	1961	Helicopter	Portion in NSO circle
20	20-41-172	28-9-33	38	DM-LSR	1959	Skyline	
	20-41-172	28-9-33	7	DM-LSR	1959	Helicopter	
21	20-41-172	28-9-33	9	DM-LSR	1959	Helicopter	
22	20-41-171	28-9-33	18	DM-LSR	1961	Helicopter	
23	20-41-171	28-9-33	22	DM-LSR	PL 1968	Skyline	
	20-41-171	28-9-33	14	DM-LSR	PL 1968	Helicopter	
25	21-40-33	29-9-5	15	DM-LSR	1965	Skyline	
26	21-39-126	28-9-31	8	DM-LSR	PL 1965**	Skyline	
27	21-39-126	28-9-31	7	DM-LSR	1966	Ground-based	
28	21-39-126	28-9-31	9	DM-LSR	1966	Ground-based	
29	21-39-126	28-9-31	8	DM-LSR	1961	Skyline	
30	21-39-126	28-9-21	16	DM-LSR	1961**	Skyline	In NSO circle
			491				

6,8,8,6,7,9,9,7,8,37

* All stands are D2-= in FOI.

** Birthdate from FOI.

All stands have been previously pre-commercially thinned.

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June 13, 2000

**Camas Analysis Area LSR EA
Alternative II & III**

EA Unit No.	Photo # (97)	Legal	Renovation (feet)	Improvement (feet)	Comments
1	29-43-36	28-9-23	800	0	Also use roadside landings - Decom.
2	29-43-36	28-9-23	0	0	Roadside landings
4	29-43-35	28-9-23	0	0	Roadside landings
5	25-44-37	28-9-25	0	0	Roadside landings
6	25-44-37	28-9-25	1,700	0	Also use roadside landings - Decom.
10	20-41-174	28-9-21	0	0	Roadside landings
13	20-42-55	28-9-27	0	0	Roadside landings
14	20-42-55	28-9-27	0	0	Helicopter landing at jct of 28-10-12.0 & 28-9-27.0
15	20-42-55	28-9-27	2,500	0	Decom. - Also use roadside landings & helicopter landing for EA Unit 14
16	20-42-55	28-9-27	0	0	Roadside landings of which one will be a helicopter landing
18	21-40-36	28-9-29	0	0	Helicopter landing on road No. 28-9-32.0
19	21-40-36	28-9-29	1,600 *	0	Decom. - Helicopter landing on road No. 28-9-18.0 B
20	20-41-172	28-9-33	0	2,400	Decom. - Also roadside landings of which one will be a helicopter landing
21	20-41-172	28-9-33	0	0	Use helicopter landing on road for EA Unit 20
22	20-41-171	28-9-33	0	0	Use helicopter landing for EA Unit 23
23	20-41-171	28-9-33	800	0	Decom. - Also use roadside landings of which one will be a helicopter landing
25	21-40-33	29-9-5	0	0	Roadside landings
26	21-39-126	28-9-31	700	0	Also use roadside landings - Decom.
27	21-39-126	28-9-31	0	0	Roadside landings
28	21-39-126	28-9-31	0	0	Roadside landings
29	21-39-126	28-9-31	1,300 *	0	Also use roadside landings - Decom.
30	21-39-126	28-9-21	0	0	Roadside landings
			9,400	2,400	

NOTE: There is no new road construction associated with the action alternatives.

* These roads will be resurfaced for winter use.

Roads identified to be renovated or improved are existing roads open for use that have had some vegetation encroachment and need improvements to drainage. The action alternatives will improve the drainage and the roads will be left in a stable pre-hydrologic condition after decommissioning.